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Diesel Oxidation Catalyst

What is a Diesel Oxidation Catalyst?

- A diesel oxidation catalyst (DOC) is a device that uses a chemical process to break down pollutants in the exhaust stream into less harmful components.
- More specifically, it is a physical device with a porous ceramic honeycomb-like structure that is coated with a material that catalyzes a chemical reaction to reduce pollution.

What is Particulate Matter?

- Particulate matter, or PM, is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. Some particles are large or dark enough to be seen as soot or smoke. Others are so small that individually they can only be detected with an electron microscope. Particles come from a variety of sources such as cars, trucks, buses, factories, construction sites, tilled fields, unpaved roads, stone crushing, and burning of wood.
- In addition to particulate matter (PM), diesel vehicles emit nitrogen oxides (NOx) and hydrocarbons (HC) both of which contribute to the formation of ozone as well as carbon monoxide (CO).

What are the health effects of diesel exhaust?

- The small particles in diesel exhaust (known as particulate matter) can penetrate deep into the lungs and pose health risks including aggravated asthma symptoms, respiratory symptoms in healthy individuals, and other health problems.
- Children are more susceptible to air pollution than healthy adults because their respiratory systems are still developing and they have a faster breathing rate.
- In addition to particulate matter (PM), diesel vehicles emit nitrogen oxides (NOx) and hydrocarbons (HC) both of which contribute to the formation of ozone as well as carbon monoxide (CO).
- Fortunately there are several techniques and technologies designed to reduce diesel pollution. This fact sheet discusses diesel oxidation catalysts.

What are the benefits of a DOC retrofit?

- DOCs reduce emissions of particulate matter by at least 20%.
- DOCs also reduce emissions of hydrocarbons by 50% and carbon monoxide by 40%.

Does the EPA verify these emission reductions?

- Yes. For a list of DOCs and other technologies that EPA has verified, visit: (www.epa.gov/otaq/retrofit/retroverifiedlist.htm). For more information about EPA's verification process, visit: (www.epa.gov/otaq/retrofit/retrofittech.htm).

How much does a DOC cost?

- DOCs for school buses cost about $1,000 - $2,000. Field experience suggests DOCs take about 1-3 hours to install.

What type of fuel does a DOC require?

- DOCs can be used with regular diesel fuel.
- The effectiveness of a DOC may be increased with the use of ultra low sulfur diesel (ULSD – 15 parts per million sulfur). Currently, ULSD costs between 8 and 25 cents per gallon more than regular diesel. ULSD is available in many parts of the country now and will be available nationwide beginning in June 2006.

Can a DOC be used on any engine?

- Yes. DOCs have been used for years on a variety of vehicles including trucks, buses and construction equipment.

Are there special maintenance requirements for a DOC?

- No. Much like a catalytic converter on a car, once a DOC is installed, it rarely requires maintenance.

How long does a DOC last?

- Most DOCs come with a 100,000 to 150,000 mile warranty, and can last 7 to 15 years.

Where can I get a DOC?

- For more information about manufacturers of DOCs or other retrofit equipment visit: (www.epa.gov/otaq/retrofit/cont_retromfrs.htm).